SPAN MRI Analytics Data Dictionary

September 8, 2020

This document is a summary of variables that we can extract through the SPAN MRI analytics pipeline developed at LONI. We can produce two tables that summarize each scanning session: first, we can summarize the images collected as indicated by the DICOM headers, and second, we can summarize the results of the analytics pipeline. These are logically separate because they are structured somewhat differently. The first table of scanning parameters has multiple entries, i.e. a table with multiple rows and columns with one row for each type of image acquired. The second table of analytics results is simpler and only stored key-value pairs, e.g. the lesion volume. The variables associated with each table are documented below, where we list the variable name, description, and possible values (and whether it may be missing).

**Scanning Session Data Table**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Description | Possible Values | Missing? |
| InstitutionName | The DICOM institution name | String (up to 1024 char) | No |
| Manufacturer | The DICOM scanner manufacturer | String (up to 1024 char) | No |
| ManufacturerModelName | The DICOM scanner model name | String (up to 1024 char) | No |
| SoftwareVersions | The DICOM scanner software version | String (up to 1024 char) | No |
| MagneticFieldStrength | The DICOM scanner field strength | String (up to 1024 char) | No |
| AcquisitionDate | The DICOM scanning acquisition date | String (up to 1024 char) | No |
| StudyID | The DICOM study ID | String (up to 1024 char) | No |
| StudyDescription | The DICOM study description | String (up to 1024 char) | No |
| ProtocolName | The DICOM protocol name | String (up to 1024 char) | No |
| SeriesDescription | The DICOM series description | String (up to 1024 char) | No |
| SequenceName | The DICOM sequence name | String (up to 1024 char) | No |
| RepetitionTime | The DICOM repetition time | String (up to 1024 char) | No |
| EchoTime | The DICOM echo time | String (up to 1024 char) | No |
| SliceThickness | The DICOM image slice thickness | Floating point number | No |
| PixelSizeX | The reconstructed image in-plane x resolution | Floating point number | No |
| PixelSizeX | The image in-plane resolution in Y | Floating point number | No |
| SliceCount | The number of slices | Integer (positive) | No |
| MatrixSizeX | The image matrix size in X | Integer (positive) | No |
| MatrixSizeY | The image matrix size in Y | Integer (positive) | No |
| FilenameSeries | The series identifier extracted from the filename | String (up to 1024 char) | No |
| FilenameImage | The image identifier extracted from the filename | String (up to 1024 char) | No |
| FilenameDate | The upload date extracted from the filename | String (up to 1024 char) | No |
| FilenameBase | The remainder of the filename | String (up to 1024 char) | No |

**Image Analytics Data Table**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Description | Possible Values | Missing? |
| BrainTissueVolume | The volume of normal appearing brain tissue (mL) | Floating point | No |
| VentricularVolume | The volume of the cerebral spinal fluid (mL) | Floating point | No |
| LesionVolume | The volume of the lesion (mL) | Floating point | No |
| HemorrhageVolume | The volume of tissue hemorrhage | Floating point | Yes |
| MidlineShift | The amount of deviation of the brain midline (microns) | Floating point | No |
| LesionMeanT2 | The average of T2 inside the lesion (sec) | Floating point | Yes |
| LesionStdT2 | The standard deviation of T2 inside the lesion (sec) | Floating point | Yes |
| LesionMeanADC | The average of ADC inside the lesion (mm2/sec) | Floating point | Yes |
| LesionStdDC | The standard deviation of ADC inside the lesion (mm2/sec) | Floating point | Yes |
| VentricularMeanADC | The average of T2 inside the ventricles (sec) | Floating point | Yes |
| VentricularStdADC | The standard deviation of T2 inside the ventricles (sec) | Floating point | Yes |
| VentricularMeanADC | The average of ADC inside the ventricles (mm2/sec) | Floating point | Yes |
| VentricularStdADC | The standard deviation of ADC inside the ventricles (mm2/sec) | Floating point | Yes |
| LesionConfidence | The confidence in the lesion segmentation (unitless) | Floating point | Yes |
| VentricularConfidence | The confidence in the ventricle segmentation (unitless) | Floating point | Yes |
| SNR | The signal-to-noise ratio (unitless) | Floating point | No |
| CNR | The contrast-to-noise ratio (unitless) | Floating point | No |
| SVNVR | The signal-variation-to-noise-variation ratio (unitless) | Floating point | No |
| ForegroundT2 | The average foreground T2 value (mm2/sec) | Floating point | No |
| BackgroundT2 | The average background T2 value (mm2/sec) | Floating point | No |
| ForegroundADC | The average foreground ADC value (mm2/sec) | Floating point | No |
| BackgroundADC | The average background ADC value (mm2/sec) | Floating point | No |
| BiasFieldT2 | The amount of T2 signal inhomogeneity detected (unitless) | Floating point | No |
| BiasFieldADC | The amount of ADC signal inhomogeneity detected (unitless) | Floating point | No |